THE IMPACT OF CRISES, LIQUIDITY AND CONTAGION ON STOCK MARKET DEVELOPMENT: EVIDENCE FROM ASEAN – 5 COUNTRIES

MOHD YUSHAIRI BIN MAT YUSOFF

DOCTOR OF PHILOSOPHY
UNIVERSITI UTARA MALAYSIA

THE IMPACTS OF CRISES, LIQUIDITY AND CONTAGION ON STOCK MARKET DEVELOPMENT: EVIDENCE FROM ASEAN – 5 COUNTRIES

By
MOHD YUSHAIRI BIN MAT YUSOFF

Thesis submitted to
School of Economic, Finance and Banking
Universiti Utara Malaysia
In fulfilment of requirement for degree of
Doctor of Philosophy (Finance and Banking)

CERTIFICATION OF THESIS WORK

Kolej Perniagaan
(College of Business)
Universiti Utara Malaysia

PERAKUAN KERJA TESIS / DISERTASI
(Certification of thesis / dissertation)

Kami, yang bertandatangan, memperakukan bahawa
(We, the undersigned, certify that)

MOHD YUSHAIRI MAT YUSOFF (900256)

calon untuk Ijazah
(candidate for the degree of) **DOCTOR OF PHILOSOPHY (FINANCE & BANKING)**

telah mengemukakan tesis / disertasi yang bertajuk:
(has presented his/her thesis / dissertation of the following title):

THE IMPACT OF CRISES, LIQUIDITY AND CONTAGION ON STOCK MARKET DEVELOPMENT: EVIDENCE FROM ASEAN-5 COUNTRIES

seperti yang tercatat di muka surat tajuk dan kulit tesis / disertasi.
(as it appears on the title page and front cover of the thesis / dissertation).

Bahawa tesis/disertasi tersebut boleh diterima dari segi bentuk serta kandungan dan meliputi bidang ilmu dengan memuaskan, sebagaimana yang ditunjukkan oleh calon dalam ujian lisan yang diadakan pada: **25 Januari 2018.**
(That the said thesis/dissertation is acceptable in form and content and displays a satisfactory knowledge of the field of study as demonstrated by the candidate through an oral examination held on: ***25 January 2018****).*

Pengerusi Viva *(Chairman for Viva)*	**Assoc. Prof. Dr. Kamarun Nisham Taufil Mohd**	Tandatangan *(Signature)*	
Pemeriksa Luar *(External Examiner)*	**Assoc. Prof. Dr. Jaafar Pyeman**	Tandatangan *(Signature)*	
Pemeriksa Luar *(External Examiner)*	**Assoc. Prof. Dr. Nurul Shahnaz Ahmad Mahdzan**	Tandatangan *(Signature)*	

Tarikh: **25 Januari 2018**
(Date)

Nama Pelajar (Name of Student)	:	**Mohd Yushairi Mat Yusoff**
Tajuk Tesis / Disertasi *(Title of the Thesis / Dissertation)*	:	**The Impact of Crises, Liquidity and Contagion on Stock Market Development: Evidence from ASEAN-5 Countries**
Program Pengajian *(Programme of Study)*	:	**Doctor of Philosophy (Finance & Banking)**
Nama Penyelia/Penyelia-penyelia *(Name of Supervisor/Supervisors)*	:	**Assoc. Prof. Dr. Sallahuddin Hassan**

Tandatangan

PERMISSION TO USE

In presenting this thesis in fulfillment of the requirements for a Post Graduate degree from the Universiti Utara Malaysia (UUM), I agree that the Library of this university may make it freely available for inspection. I further agree that permission for copying this thesis in any manner, in whole or in part, for scholarly purposes may be granted by my supervisors or in their absence, by the Dean of Othman Yeop Abdullah Graduate School of Business where I did my thesis. It is understood that any copying or publication or use of this thesis or parts of it for financial gain shall not be allowed without my written permission. It is also understood that due recognition shall be given to me and to the Universiti Utara Malaysia (UUM) in any scholarly use which may be made of any material in my thesis.

Request for permission to copy or to make other use of materials in this thesis in whole or in part should be addressed to:

Dean of Othman Yeop Abdullah Graduate School of Business
Universiti Utara Malaysia
06010 UUM Sintok
Kedah Darul Aman

ABSTRACT

This study examines the effect of financial crises, stock market liquidity and contagion on stock market development (*SMD*) in the ASEAN – 5 countries using aggregate panel data over the period of 1990 – 2014. Mean comparison analysis is employed to test the *SMD* differences for pre – and post – crises period. Traditional panel analyses; Random Effects Model is utilized to test the effect of stock market liquidity on the *SMD*. Then, the Seemingly Unrelated Regression Analysis (SUR) is applied to examine the contagion effect of the United States' stock market performance on the *SMD* of ASEAN – 5 countries. Results of mean comparison analysis show that the *SMD* of Malaysia, Thailand and Singapore are significantly different after Asian Financial Crisis in 1997 – 1998, reduction were also displayed in the *SMD* of Malaysia and Singapore after the Global Financial Crisis in 2008. Moreover, results of Random Effects Model signify that stock market liquidity has a significant effect on the *SMD* of ASEAN – 5 countries. On the contagion effect, SUR estimation results show that stock market performance of the United States significantly affects the *SMD* of Malaysia, Singapore and Thailand while the *SMD* of Indonesia and Philippines are affected by considering interaction term. Based on the findings, this study proposes to the policymakers the use of financial institutions reformation, bilateral banking integration, financial support mechanism and revision on crisis management frameworks as the precautionary measures against financial crisis. Moreover, ASEAN – 5 should encourage long – term investment, lowering investment costs and reforms the corporate governance in enhancing stock market liquidity. To reduce the contagion effects particularly from the US, macroeconomic policies responses, trade openness and the inspiration towards an integrated stock market are suggested for ASEAN – 5 countries.

Keywords: stock market development, ASEAN – 5, crises, stock market liquidity, contagion.

ABSTRAK

Kajian ini mengkaji kesan krisis kewangan, kecairan pasaran saham dan penularan ke atas pembangunan pasaran saham (*SMD*) di negara-negara ASEAN – 5 menggunakan data panel agregat bagi tempoh 1990 – 2014. Analisis perbandingan min digunakan untuk menguji perbezaan *SMD* bagi tempoh pra – dan pasca – krisis. Analisis panel tradisional digunakan untuk menguji kesan kecairan pasaran saham ke atas *SMD*. Seterusnya, Analisis *Seemingly Unrelated Regression* (SUR) digunakan untuk mengkaji kesan penularan prestasi pasaran saham Amerika Syarikat ke atas *SMD* negara – negara ASEAN – 5. Keputusan analisis perbandingan min menunjukkan perbezaan signifikan bagi *SMD* di Malaysia, Thailand dan Singapura selepas Krisis Kewangan Asia pada tahun 1997 – 1998, penurunan juga turut dipaparkan di *SMD* Malaysia dan Singapura selepas Krisis Kewangan Global pada tahun 2008. Selain itu, keputusan analisis Model Kesan Rawak menunjukkan kecairan pasaran saham mempunyai kesan signifikan ke atas *SMD* negara ASEAN – 5. Berkenaan dengan kesan penularan, anggaran model SUR menunjukkan prestasi pasaran saham Amerika Syarikat mempunyai kesan yang signifikan ke atas *SMD* di Malaysia, Singapura dan Thailand manakala *SMD* di Indonesia dan Filipina terkesan dengan mempertimbangkan terma interaksi. Berdasarkan penemuan, kajian ini mencadangkan kepada penggubal dasar untuk melaksanakan reformasi dalam institusi kewangan, integrasi perbankan dua hala, mekanisme sokongan kewangan dan semakan rangka pengurusan krisis sebagai langkah bagi menghadapi krisis kewangan. Selain itu, ASEAN – 5 juga harus menggalakkan pelaburan jangka panjang, mengurangkan kos pelaburan dan memperbaharui tadbir urus korporat untuk meningkatkan kecairan pasaran saham. Bagi tujuan mengurangkan kesan penularan terutamanya dari Amerika Syarikat, maklum balas dasar makroekonomi, keterbukaan perdagangan dan inspirasi ke arah pasaran saham bersepadu adalah dicadangkan untuk negara –negara ASEAN – 5.

Kata Kunci: pembangunan pasaran saham, ASEAN – 5, krisis, kecairan pasaran saham, penularan.

ACKNOWLEDGEMENT

Alhamdulillah, Praise and gratitude be given to Allah the Almighty for putting forward me such a great strength, patience, courage, and ability to complete this thesis.

Completion of this thesis was possible with the support of several people. First of all, I am extremely grateful to my supervisor Assoc. Prof. Dr. Sallahuddin Hassan for his valuable guidance, scholarly inputs and consistent encouragement given throughout this research work. He has really been for me as the centre of motivation and guidance. Completion of this thesis is impossible without his continuous assistance.

I would also like to express deeply and sincerely my gratitude to my parents, Mat Yusoff bin Ahmad and Eshah binti Ismail for their love, affection, trust, and support they have extended me every step of my life. In addition, I would like to present my sincere and profound gratitude to lovely wife and daughter for their love, support and encouragements throughout all my life.

In addition, I would like to present my sincere and profound gratitude to my brothers and sisters for their love, support and encouragements throughout all my life. Finally, my demonstrative appreciation goes to all my friends and everyone who has helped either directly or indirectly to the completion of this thesis. Thank you very much.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

LIST OF ABBREVIATIONS

Abbreviation	Full Meaning
AFC	Asia Financial Crisis
ARCH	Autoregressive Conditional Heteroskedasticity
ASEAN	Association of South East Asian Nation
CRT	Credit to Private Sector by Banks
DUM	Dummy
EAS	East Asia Summit
EU	European Union
FEM	Fixed Effects Model
GARCH	Generalized Autoregressive Conditional Heteroskedasticity
GDP	Gross Domestic Product
INF	Inflation
INT	Interest
IPO	Initial Public Offering
LIQ	Stock Market Liquidity
MCAP	Market Capitalization
MRI	Market Index
REM	Random Effects Model
SAV	Total Saving
SMD	Stock Market Development
SUR	Seemingly Unrelated Regression
TAC	Treaty of Amity and Cooperation
UK	United Kingdom
US	The United States of America
USD	United States Dollar
VAR	Vector Autoregressive

CHAPTER 1

INTRODUCTION

1.0 Introduction

This chapter explains the background of the study. In Section 1.1, the overview of the Association of South East Asian Nations – 5 (ASEAN – 5), the Asian Financial Crisis (AFC) and Global Financial Crisis (GFC), macro facts of stock market development (*SMD*), stock market liquidity and contagion effects are described. Then, Section 1.2 serves the problem statement; Section 1.3 presents the research questions which are then translated into research objective in Section 1.4; Section 1.5 highlights the scope and significance of the study; while the organisation of the study is explained in the last section.

1.1 Background of the Study

Stock market is a part of the financial market in the overall financial system. It provides different sources of financial instruments to the country through stock trading activities. Also, stock market can be used by the government and private firms for sourcing new and additional finances for new and expanding commercial or industrial projects. It is one of the most sensitive markets which affects the economic conditions of a country such that any aggressive changes in the stock market could give a significant implications to the economy (Barakat, Elgazzar, & Hanafy, 2016). Thus, stock market should be continuously developed for increasing capital formation, improving domestic financial resource mobilization, enhancing supply of long-term capital and achieving competent allocation of capital (Chipaumire & Ngirande, 2014).

The contents of the thesis is for internal user only

REFERENCES

Abdelbaki, H. H. (2013). Causality relationship between macroeconomic variables and stock market development: Evidence from Bahrain. *The International Journal of Business and Finance Research 7*(1), 69–84.

Calderon-Rossell, R. J. (1990). The structure and evolution of world stock markets, in Pacific Basin Capital Markets Research Proceeding of the First Annual Pacific Basin Finance Conference (Eds) S. G. Rhee and P. C. Rosita, Taipei, China, 13–15 March 1990.

Calderon-Rossell, R. J. (1991). The determinants of stock market growth, in Pacific Basin Capital Markets Research Proceeding of the Second Annual Pacific Basin Finance Conference (Eds) S. G. Rhee and P. C. Rosita, Vol. II, Bangkok, Thailand, 4–6 June 1991.

Clapham, J. H., Thornton, H., & von Hayek, F. a. (1941). An Enquiry into the Nature and Effects of the Paper Credit of Great Britain (1802). *Economica*, *8*(30), 210.

rate appreciation in Latin America: The role of external factors. *IMF Staff Papers, 40*(1), 108–151.

Capasso (2006). Stock market development and economic growth. Research Paper, UNU-WIDER, United Nations University (UNU), No. 2006/102. Retrieved from: https://www.econstor.eu.

Celik, S. (2012). The more contagion effect on emerging markets: The evidence of DCC-GARCH model. *Economic Modelling*, *29*(5), 1946–1959.

Chaisrisawatsuk, S. (2016). Capital market development in ASEAN economic community: issues and opportunities for other subregions of the Asia-pacific region. *First High-Level Follow-up Dialogue on Financing for Development in Asia and the Pacific.* Retreived from: https://www.unescap.org.

Charoenwong, C.; Ding, David K. and Yang, Y.C. (2013). Liquidity and crises in Asian equity markets. *Market microstructure in emerging and developed markets*, 407. Research Collection Lee Kong Chian School of Business.

Chen, W. Y., Leng, G. K., and Lian, K. K. (2005). Financial crisis and intertemporal linkages across. *Review of Quantitative Finance and Accounting*, *24*(4), 359–377.

Cheung, L., Tam, C. S. and Szeto, J. (2009). Contagion of financial crises: A literature review of theoretical and empirical frameworks. *Hong Kong Monetary Authority Research Paper,2/09,1-18.*

Chipaumire, G. and Ngirande, H. (2014). How stock market liquidity impact economic growth in South Africa. *Journal of Economics*, *5*(2), 185–192.

Chordia, T., Sarkar, A. and Avanidbar Subrahmanyam. (2005). An empirical analysis of stock and bond market liquidity. *Review of Financial Studies*, *18*(1), 61.

Chow, G. C., Huang, S. and Niu, L. (2013). *Econometric analysis of stock price co-movement in the economic integration of East Asia*. Retrieved from: http://dspace.xmu.edu.cn

Chunxiu, M. and Masih, M. (2014). *Contagion effects of US subprime crisis on ASEAN-5 stock markets: Evidence from MGARCH-DCC application*. Retrieved from: https://mpra.ub.uni-muenchen.de.

Cihak, M., Demirgüç-Kunt, A., Feyen, E. and Levine, R. (2012). Benchmarking Financial Systems around the World. *World Bank Policy Research Working Papers WPS6175*, (6175), 1–58.

Claessens, S. and Forbes, K. (2004). International financial contagion: The theory, evidence, and policy implications. *Paper presented at The conference of The IMF´s Role in Emerging Market Economies: Reassessing the Adequacy of its Resources' organized by RBWC, DNB and WEF in Amsterdam*, 18–19.

Clapham, J. H., Thornton, H. and von Hayek, F. a. (1941). An enquiry into the nature and effects of the paper credit of Great Britain (1802). *Economica*, *8*(30), 210.

Click, R. W. and Plummer, M. G. (2005). Stock market integration in ASEAN after the Asian financial crisis, *Working Paper Series Vol. 2003-06*, *The International Centre for the Study of East Asian Development, Kitakyushu.*

Corsetti, G., Pericoli, M. and Sbracia, M. (2005). 'Some contagion, some interdependence': More pitfalls in tests of financial contagion. *Journal of International Money and Finance*, *24*(8), 1177–1199.

Crisostomo, R., Padilla, S. and Visda, M. (2013). Philippine stock market in perspective.In *Proc. 12th National Convention on Statistics*, 1-2.

Dailami, Mansoor, and Michael Atkin (1990). Stock markets in developing countries: Key issues and a research agenda. *Policy Research Working Paper*, WPS5 15, World Bank.

Dalsenius, M. (2007). *Effects of Stock Market Liquidity on Growth : Empirics and theory*. Department of Economics, Uppsala University, Sweden.

Daly, K. J. (2003). Southeast Asian stock market linkages: Evidence from pre-and post-October 1997. *ASEAN Economic Bulletin*, 73-85.

Danielsson, J., Shin, H. S. and Zigrand, J.-P. (2011). Balance sheet capacity and endogenous risk. *The Paul Woolley Center Working Paper Series*, *16*(665), 1–41.

Datar, M. K. (2000, December). Stock market liquidity: Measurement and implications. In *Proc. of the 4th Capital Market Conference*. Retrieved from: https://pdfs.semanticscholar.org

de la Torre, A., Feyen, E. and Ize, A. (2011). Financial Development: Structure and Dynamics. *World Bank Policy Research Working Paper*, (5854), 1–33.

Demirgüç-Kunt, A. and Maksimovic, V. (1996). Stock market development and financing choices of firms. *The World Bank Economic Review*, *10*(2), 341-369.

Demirgui-kunt, A. and Levine, R. (1996). Stock market development and financial intermediaries : Stylized facts. *The World Bank Economic Review*, *10*(2), 291–321.

Devereux, M. B. and Smith, G. W. (1994). International risk sharing and economic growth. *International Economic Review*, *35*(3), 535.

Diamond, D. W. and Verrecchia, R. E. (1981). Information aggregation in a noisy rational expectations economy. *Journal of Financial Economics*, *9*(3), 221–235.

Dornbusch, R., Park, Y. C. and Claessens, S. (2000). Contagion: Understanding how it spreads. *The World Bank Research Observer*, *15*(2), 177–197.

Dungey, M. and Gajurel, D. (2014). Equity market contagion during the global financial crisis: Evidence from the world's eight largest economies. *Economic Systems*, *38*(2), 161-177.

Dungey, M. and Vehbi, T. (2015). The influences of international output shocks from the US and China on ASEAN economies. *Journal of Asian Economics*, *39*, 59–71.

Easley, D. and Nicholas M. Kiefer, Maureen O'Hara, J. B. P. (1996). Liquiidty, information, and infrequency traded stocks. *Journal of Finance*, *51*(4), 1405–1436.

Easley, D. and O'hara, M. (2004). Information and the cost of capital. *The Journal of Finance*, *59*(4), 1553-1583.

Ehrmann, M. and Fratzscher, M. (2009). Global financial transmission of monetary policy shocks. *Oxford Bulletin of Economics and Statistics*, *71*(6), 739–759.

Ehrmann, M., Fratzscher, M. and Rigobon, R. (2011). Stocks, bonds, money markets and exchange rates: Measuring international financial transmission. *Journal of Applied Econometrics*, *26*(6), 948–974.

Ehrmann, M., & Fratzscher, M. (2009). Global financial transmission of monetary policy shocks. *Oxford Bulletin of Economics and Statistics*, *71*(6), 739–759.

Eickmeier, S., Gambacorta, L. and Hofmann, B. (2014). Understanding global liquidity. *European Economic Review*, *68*(402), 1–18.

El-Wassal, K. A. (2013). The development of stock markets : In search of a theory. *International Journal of Economics and Financial Issues*, *3*(3), 606–624.

Eleswarapu, V. R. and Reinganum, M. R. (1993). The seasonal behavior of the liquidity premium in asset pricing. *Journal of Financial Economics*, *34*(3), 373–386.

Engkuchik, E. N. and Kaya, H. D. (2012). The impact of the Asian crisis on stock market liquidity : Evidence from the Malaysian stock exchange. *International Journal of Business and Social Science*, *3*(8), 120–127.

Fernando, C. S. (2003). Commonality in liquidity: Transmission of liquidity shocks across investors and securities. *Journal of Financial Intermediation*, *12*(3), 233–254.

Fernández-Amador, Octavio; Gächter, Martin; Larch, Martin; Peter and Georg (2011). Monetary policy and its impact on stock market liquidity: Evidence from the euro zone, Working Papers in Economics and Statistics, 2011-06. Retrieved from: https://www.econstor.eu.

Filardo, A., George, J., Loretan, M., Ma, G., Munro, A., Shim, I., … Zhu, H. (2010). The international financial crisis: Timeline, impact and policy responses in Asia and the Pacific. *BIS Papers*, (52), 21–82.

Filer, R. K., Hanousek, J., and Campos, N. F. (2000). *Do stock markets promote economic growth?*Retrieved from: https://deepblue.lib.umich.edu.

Fong, K. Y. L., Holden, C. W. and Trzcinka, C. (2017). What Are the Best Liquidity Proxies for Global Research? *Review of Finance*, (2006), 1–47.

Forbes, K. J., and Rigobon, R. (2002). No contagion, only interdependence: Measuring stock market comovements. *The Journal of Finance*, *57*(5), 2223–2261.

Furuoka, F., Lim, B., Jikunan, C. and Chiun, L. M. (2012). Economic crisis and response: Case study of Malaysia's responses to Asian financial crisis. *Journal of Contemporary Eastern Asia, 11(1),* 43–56.

Gabrielsen, A., Marzo, M. and Zagaglia, P. (2011). Measuring market liquidity: An introductory survey. Retrieved from: https://arxiv.org.

Garcia, G. (1989). The lender of last resort in the wake of the crash. *The American Economic Review*, *79*(2), 151-155.

Garcia, V. and Liu, L. (1999a). Macroeconomic determinants of stock market development. *Journal of Applied Economics*, *II*(1), 29–59.

Garcia, V. and Liu, L. (1999b). Macroeconomic determinants of stock market development. *Journal of Applied Economics*, *II*(1), 29–59.

Ghosh, A., Saidi, R. and Johnson, K. H. (1999). Who moves the Asia-Pacific stock markets-US or Japan? Empirical evidence based on the theory of cointegration. *The Financial Review*, *34*(1), 159–169.

Goh, K. L., Wong, Y. C. and Kok, K. L. (2005). Financial crisis and intertemporal linkages across the ASEAN-5 stock markets. *Review of Quantitative Finance and Accounting*, *24*(4), 359–377.

Goyenko, R. (2006). *Liquidity and Asset Pricing*.Retrieved from: http://gradworks.umi.com.

Greenwood, J. and Smith, B. D. (1997). Financial markets in development, and the development of financial markets. *Journal of Economic Dynamics and Control*, *21*(1), 145–181.

Grimaldi, B. (2010). Detecting and interpreting financial stress in the Euro area. *ECB Working Paper*, 1214. Retrieved from: https://mba.americaeconomia.com.

Guidi, F. and Gupta, R. (2012). *Forecasting volatility of the ASEAN-5 stock markets: a nonlinear approach with non-normal errors*, Greenwich Political Economy Research Centre, University of Greenwich. Retrieved from: http://gala.gre.ac.uk.

Guinigundo, D. C. (2009). The impact of the global financial crisis on the Philippine financial system – an assessment. *Economic Inquiry*, (54), 317–342.

Hagstrom, R. G. (1997), The Warren Buffet way: Investment strategies of the world's greatest investor. New York: John Wiley and Sons.

Han, L. and Lee, I. H. (2012). Optimal liquidity and economic stability.*IMF Working Paper*, WP/12/135. Retrieved from: http://www.imf.org.

Hara, M. O. (2004). Liquidity and financial market stability, *National Bank of Belgium Working Papers Research,* 55. Retrieved from: https://www.econstor.eu.

Hasbrouck, J. and J. Seppi, D. (2001). Common factors in prices, order flows, and liquidity. *Journal of Financial Economics*, *59*(3), 383–411.

Hashmi, A. R. (1997). *Interlinkages among South East Asian stock markets (A comparison between pre- and post-1997 crisis periods).* Retrieved from: http://www.economia.uniroma2.it

Hegde, S. P. and Paliwal, R. (2011). Financial Contagion and Market Liquidity: Evidence from the Asian Crisis. *IUP Journal of Applied Finance, 17*(3), 5–33.

Ho, C.-C., Lee, C.-C., Lin, C.-T., and Wang, C. E. (2005). Liquidity, volatility and stock price adjustment: Evidence from seasoned equity offerings in an emerging market. *Review of Pacific Basin Financial Markets and Policies*, *8*(1), 31–51.

Holmstrom B. and Tirole J. (1993) Market liquidity and performance monitoring, *Journal of Political Economy*, 101,678-709.

Ibrahim, M. H. (2011). Stock market development and macroeconomic performance in Thailand. *Engineering Economics*, *22*(3), 230-240.

Jang, H. and Sul, W. (2002). The Asian financial crisis and the co-movement of Asian stock markets. *Journal of Asian Economics, 13*(1), 94–104.

Kamel, W. (2006). *Volatility in an emerging market: A case study of Egypt* (Doctoral Dissertation). Retrieved from: http://researchdirect.uws.edu.au.

Kanasro, H. A., Junejo, M. A. and Rohra, L. C. (2009). Stock market liquidity : A case study of Karachi Stock Exchange, *3*(1996), 25–34.

Kerry Cooper, S., Groth, J. C. and Avera, W. E. (1985). Liquidity, exchange listing, and common stock performance. *Journal of Economics and Business*, *37*(1), 19–33.

Kholisoh, L. (2017). Liquidity and volatility on Indonesia Stock Exchange (IDX): An evidence of JSX and SSX Merger. *Economics*, *5*(5), 492-498.

Khoon, G. S., & Lim, M.-H. (2010). The impact of the global financial crisis: the case of Malaysia. *TWN Global Economic Series*, (26), 1 - 48

Khor, M. (2017). The Asian financial crisis. *The Star Malaysia*. Retrieved from: http://www.thestar.com.my.

Kim, S. J. and Nguyen, D. Q. T. (2009). The spillover effects of target interest rate news from the U.S. Fed and the European Central Bank on the Asia-Pacific stock markets. *Journal of International Financial Markets, Institutions and Money*, *19*(3), 415–431.

Kim, Y.-J. and Kim, S.-A. (1997). *A Study on US-Asia stock price co-movement and volatility spillover effects, focusing on financial crisis period of emerging countries.* Retrieved from: http://www.akes.or.kr

King, M. A. and Wadhwani, S. (1990). Transmission of volatility between stock markets. *The Review of Financial Studies*, *3*(1), 5-33.

Kodres, L. E. and Pritsker, M. (2002). A rational expectations model of financial contagion. *The Journal of Finance*, *57*(2), 769–799.

Koulakiotis, A., Kiohos, A. and Babalos, V. (2015). Exploring the interaction between stock price index and exchange rates: an asymmetric threshold approach. *Applied Economics*, *47*(13), 1273–1285.

Ksantini, M. and Boujelbène, Y. (2014). Impact of financial crises on growth and investment: An analysis of panel data. *Journal of International and Global Economic Studies*, *7*(1), 32-57.

Kulathunga, K. (2014). Macroeconomic factors and stock market development: With special reference to Colombo Stock Exchange. *International Journal of Scientific and Research Publications*, *5*(1), 2250–3153.

Kumar, G. and Misra, A. K. (2015). Closer view at the stock market liquidity: A literature review. *Asian Journal of Finance and Accounting*, *7*(2), 35-57.

Kyle, A. S. (1985). Continuous auctions and insider trading. *Econometrica: Journal of the Econometric Society*, 53(6), 1315-1335.

La Porta, R., Lopez-de-Silanes, F., Shleifer, A. and Vishny, R. (2000). Investor protection and corporate governance. *Journal of Financial Economics*, *58*(1), 3–27.

Le, T. M., Moreno-dodson, B. and Bayraktar, N. (2012). Tax capacity and tax effort extended cross-country analysis from 1994 to 2009. World Bank Policy Research Working Paper. 6252 .1-48. retrieved from: https://openknowledge.worldbank.org.

Lee, C. L. and Takagi, S. (2015). Assessing the financial landscape for the Association of Southeast Asian Nations Economic Community, 2015. *Asia and the Pacific Policy Studies*, *2*(1), 116–129.

Lee, Kuan-Hui.(2006). *Liquidity risk and asset pricing.* (PhD dissertation). The Ohio State University. Retrieved from: https://etd.ohiolink.edu.

Lesmond, D. A. (2005). Liquidity of emerging markets. *Journal of Financial Economics*, *77*(2), 411–452.

Levine, R. (1991). Stock markets, growth, and tax policy. *The Journal of Finance*, *46*(4), 1445–1465.

Levine, R. and Zervos, S. (1998). American economic association stock markets , banks , and economic growth. *The American Economic Review*, *88*(3), 537–558.

Lipinsky, M. F., & Ong, L. L. (2014). Asia's Stock Markets: Are There Crouching Tigers and Hidden Dragons*? IMF Working Paper*.(14-37). Retrieved from: http://www.imf.org.

Lipsey, R. E. (2001). Foreign direct investors in three financial crises. *Working Paper Series, 3(8084)*. Retrieved from: https://core.ac.uk.

Liu, L. (2007). *Volatility and Mean Spillover from US and China to ASEAN*. Retrieved from: http://lup.lub.lu.se.

Liu, W. (2006). A liquidity-augmented capital asset pricing model. *Journal of Financial Economics*, *82*(3), 631–671.

Lo, A. W. and Wang, J. (2009). Stock market trading volume. *Handbook of financial econometrics*, *2*, 241-342.

Long, J. B. De, Shleifer, A., Summers, L. H. and Waldmann, R. J. (1990). Noise trader risk in financial markets. *Journal of Political Economy*, *98*(4), 703–738.

Longin, F. and Solnik, B. (1995). Is the correlation in international equity returns constant: 1960-1990. *Journal of International Money and Finance*, *14*(1), 3–26.

Maddala, G. S. and Wu, S. (1999). A comparative study of unit root tests with panel data and a new simple test. *Oxford Bulletin of Economics and Statistics*, *61*(S1), 631–652.

Majid, M. S. A. and Mydin, Meera Ahamed Kameel Omar, A. H. A. A. (2009). Dynamic linkages among ASEAN-5 emerging stock markets. *International Journal of Emerging Markets*, *4*(2), 160-184.

Manning, N. (2002). Common trends and convergence? South East Asian equity markets, 1988-1999. *Journal of International Money and Finance*, *21*(2), 183–202.

Marshall, D. (1998). Understanding The Asian crisis: Systemic Risk as coordination failure. *Economic Perspectives-Federal Reserve Bank of Chicago*, (22), 13–28.

Masih, A. M. M. and Masih, R. (1999). Are Asian stock market fluctuations due mainly to intra-regional contagion effects? Evidence based on Asian emerging stock markets. *Pacific-Basin Finance Journal*, *7*, 251–282.

Mat Yusoff, M. Y. and Hassan, S. (2017). The stock market development differences among ASEAN – 5 countries. *International Journal of Economics, Business and Management Research 1*(3), 193–200.

Matsumura, M. S. and Vicente, J. V. M. (2010). The role of macroeconomic variables in sovereign risk. *Emerging Markets Review*, *11*(3), 229–249.

Modigliani, F. and Miller, M. H. (1958). The cost of capital, corporation finance and the theory of investment. *American Economic Review*, *48*(3), 261–297.

Moser, T. (2003). What is international financial contagion? *International Finance*, *6*(2), 157–178.

Naceur, S. Ben, Ghazouani, S. and Omran, M. (2005). The determinants of stock market development in the Middle-Eastern and North African region. *Managerial Finance*, *33*(7), 477–489.

Nair, L. R. (2008). Macroeconomic determinants of stock market development in India. *Management Review*, *1*(1), 33–48.

Ndebbio, J. E. U. (2004). Financial Deepening, Economic Growth, and Development Evidence from Selected Sub-Saharan African Countries. *African Economic Research Paper*, 142. Retrieved from: https://opendocs.ids.ac.uk.

Ng, A. (2000). Volatility spillover effects from Japan and the US to the Pacific–Basin. *Journal of International Money and Finance*, *19*(2), 207–233.

North, D. C. and Weingast, B. R. (1989). Constitutions and commitment: The evolution of institutions governing public choice in seventeenth-century England. *The Journal of Economic History*, *49*(4), 803–832.

Nowbutsing, B. M. and Odit, M. P. (2009). Stock market development and economic growth: The case of Mauritius. *International Business and Economics Research Journal*, *8*(2), 77–88.

Nsofor, E. S. (2016). Market liquidity as a determinant of stock market development in Nigeria. *International Journal of Empirical Finance*, *5*(1), 11-21.

Owiredu, A., Oppong, M. and Asomaning, S. A. (2016). Macroeconomic determinants of stock market development in Ghana. *International Finance and Banking*, *3*(2), 33.

Pagano, M. (1993). Financial markets and growth. An overview. *European Economic Review*, *37*(2–3), 613–622.

Pastor, L. and Stambaugh, R. F. (2003). Liquidity risk and expected stock returns. *Journal of Political Economy*, *111*(3), 642–685.

Pistor, K., Raiser, M. and Gelfer, S. (2000). Law and finance in transition economies. *The Economics of Transition*, *8*(2), 325–368.

Poldauf, P. (2011). *International Stock Market Co-movements and The Global Financial Crisis (Master's Thesis).* Institute of Economic Studie, Faculty of Social Sciencess, Charles University, Prague, Czech Republic.

Rahman, a. a., Sidek, N. Z. M., Zahirah, N., Sidek, M. and Abdul-rahman, A. (2011). Spill-over effect of US sub-prime crisis on ASEAN-5 stock markets. *Business and Social Science Research Conference*, *7*(3), 207–217.

Rahman, M. M. and Salahuddin, M. (2010). The determinants of economic growth in Pakistan: Does stock market development play a major role? *Economic Issues*, *15*, 69–86.

Ramlee, R. and Ali, R. (2012). Liquidity , initial public offering (IPO) Long- term return and government ownership : Evidence from Bursa Malaysia IPO stocks, *8*, 39–66.

Remorov, R. (2014). Stock price and trading volume during Market Crashes. *International Journal of Marketing Studies*, *6*(1), 21–30.

Rezayat, F. and Yavas, B. F. (2006). International portfolio diversification: A study of linkages among the U.S., European and Japanese equity markets. *Journal of Multinational Financial Management*, *16*(4), 440–458.

Royfaizal, R. C., Lee, C., and Azali, M. (2009). ASEAN-5+ 3 and US stock markets interdependence before, during and after Asian Financial Crisis. *International Journal of Economics and Finance*, *1*(2), 45.

Sarr, A. and Lybek, T. (2002). Measuring liquidity in financial markets. *IMF Working Paper*.WP/02/232. Retrieved from: http://.www.imf.org.

Serwa, D. (2005). *Empirical Evidence on Financial Spillovers and Contagion to International Stock Markets* (Ph.D Dissertation). Retrieved from: https://www.deutsche-digitale-bibliothek.de.

Sezgin, F. and Atakan, T. (2015). The role of the Calderon-Rossell model on determining the developments of equity capital markets: A study of fragile five countries. *Istanbul University Journal of the School of Business Administration*, *44*(1), 2–11.

Sheng, H.-C., and Tu, A. H. (2000). A study of cointegration and variance decomposition among national equity indices before and during the period of the Asian Financial Crisis. *Journal of Multinational Financial Management*, *10*(3–4), 345–365.

Sok-Gee, C., and Karim, M. Z. a. (2010). Volatility spillovers of the major stock markets in ASEAN-5 with the US and Japanese stock markets. *International Research Journal of Finance and Economics*, *44*(44), 156–167.

Stracca, L. (2005). Liquidity and real equilibrium interest rates: a framework of analysis, ECB Working Paper, No. 542. Retrieved from: https://www.econstor.eu.

Strohsal, T., and Weber, E. (2015). Time-varying international stock market interaction and the identification of volatility signals. *Journal of Banking and Finance*, *56*, 28–36.

Sukcharoensin, P. and Sukcharoensin, S. (2013). The analysis of stock market development indicators : Evidence from the ASEAN-5 equity markets, *4*(6), 4–7.

Sun, T. (2015). *The impact of global liquidity on financial landscapes and risks in the ASEAN-5 Countries. IMF Working Paper. WP/15/211*.Retrieved from: http://www.imf.org.

Sun, W. (2003). Relationship between trading volume and security prices and returns. *Area Exam Report, Technical Report, MIT Laboratory for Information and Decision Systems*. Retrieved from: http://sensorweb.lids.mit.edu.

Tadesse, S. (2005). Stock markets liquidity , corporate governance and small firms, *William Davidson Institute Working Paper,* 883. Retrieved from: https://deepblue.lib.umich.edu.

Talla, J. T. (2013). *Impact of macroeconomic variables on the stock market prices of the Stockholm Stock Exchange* (Ph.D dissertation). Jönköping International Business School. Retrieved from: http://www.diva-portal.org.

Tan, T. A. G. (2012). Stock market integration : Case of the Philippines: Review of literature : Relationships of international stock markets, *19*(2002), 75–90.

Tanzi, V. and Davoodi, H. (1997). Corruption, public investment and growth. *IMF Working Papper*. WP/97/139. Retrieved from: http://www.imf.org.

Trivedi, J., Birău, R.(2013). Analysis of international contagion in emerging stock markets in terms of global financial crisis. Paper presented in 2nd WSEAS International Conference on Finance, Accounting and Auditing, Brasov, Romania, 120-125.

United Nation. (2010). *Private capital flows: Foreign direct investment and portfolio investment*.Retrieved from: www.undp.org

Vagias, D. and Dijk, M. A. Van. (2010). International capital flows and liquidity.Retrieved from: http://www.tinbergen.nl.

Vayanos, D. and Wang, J. (2013). Market liquidity, theory and empirical evidence. The Paul Woolley Centre Working Paper Series, No 32. Retrieved from: http://www.lse.ac.uk.

Verick, S., & Islam, I. (2010). The Great Recession of 2008-2009 : Causes, Consequences and Policy Responses. *Institute for the Study of Labour*, (4934), 3–61.

Vu, V., Chai, D. and Do, V. (2015). Empirical tests on the liquidity-adjusted capital asset pricing model. *Pacific-Basin Finance Journal*, *35*, 73-89.

Watanabe, A. (2004). *Macroeconomic Sources of Systematic Liquidity*. Retrieved from: http://www.bus.ualberta.ca/afujimoto.

Werner, R. A. (2014). Can banks individually create money out of nothing? The theories and the empirical evidence. *International Review of Financial Analysis*, *36*(C), 1–19.

Williams, R. (2015). *Interaction effects and group comparisons*. Richard Williams, University of Notre Dame. Retrieved from: http://www3.nd.edu.

Wongswan, J. (2006). Transmission of information across international equity markets. *Review of Financial Studies, 19*(4), 1157–1189.

Wyman, O. (2016). Accelerating capital markets development in emerging economies country case studies, World Economic Forum Report. Retrieved from http://www.weforum.org.

Wyss, R. von. (2004). *Measuring and predicting liquidity in the stock market* (Ph.D Dissertation). Universitat St. Gallen. Retrieved from: http://www1.unisg.ch.

Yan, X. S., and Ferris, S. P. (2004). *Volatility, returns and liquidity: the relation between online trading and stock market behavior*. Working paper, University of Missouri–Columbia. Retrieved from: https://pdfs.semanticscholar.org.

Yang, A. S., and Pangastuti, A. (2016). Stock market efficiency and liquidity: The Indonesia Stock Exchange merger. *Research in International Business and Finance*, *36*, 28-40.

Yang, L. and Hamori, S. (2014). Spillover effect of US monetary policy to ASEAN stock markets: Evidence from Indonesia, Singapore, and Thailand. *Pacific-Basin Finance Journal*, *26*, 145–155.

Yang, T., and Shimada, T. (2011). Challenges and developments in the financial systems of the Southeast Asian Economies. *OECD Journal: Financial Market Trends*, *2010*(2), 137–159.

Yartey, C. A., and Komla, C. (2007). Stock market development in Sub-Saharan Africa : Critical Issues and Challenges. *IMF Working Paper*.WP/07/209. Retrieved from: http://www.imf.org

Yuping Huang. (2015). *Liquidity in equity markets.* (Ph.D Dissertation). University of Glasgow. Retrieved from; http://theses.gla.ac.uk.

Zellner, A. (1962). An efficient method of estimating seemingly unrelated regressions and tests for aggregation bias. *Journal of the American statistical Association*, *57*(298), 348-368.

Zhang, X. F. (2010). The effect of high-frequency trading on stock volatility and price discovery. Retrieved from: http://mitsloan.mit.edu.

APPENDIX A

Pooled Mean Group Estimation Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	63.96	17.66	3.62	0.00*
LIQ	0.05	0.01	4.51	0.00*
GDP	-0.03	0.01	-5.23	0.00*
INT	-2.98	1.09	-2.73	0.01*
INF	-1.72	0.93	-1.85	0.07**
SAV	101.72	22.48	4.53	0.00*
CRT	0.72	0.14	5.01	0.00*
DUM	-39.21	12.82	-3.06	0.00*
Diagnostic Test				
R-squared	0.57			
Adjusted R-squared	0.55			
S.E. of regression	49.81			
F-statistic	22.48			
Prob(F-statistic)	0.00*			

Note: * and ** indicate significant variables at the 5 and 10 percent significance levels, respectively.

APPENDIX B

Fixed Effects Estimation Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	68.34	19.25	3.55	0.00*
LIQ	0.34	0.09	3.85	0.00*
GDP	-0.01	0.01	-1.78	0.08**
INT	-0.26	0.97	-0.27	0.79
INF	0.27	0.86	0.32	0.75
SAV	57.57	23.75	2.42	0.02*
CRT	0.22	0.23	0.98	0.33
DUM	-31.28	10.02	-3.12	0.00*
Fixed Effects (Cross)				
_M--C	62.05			
_I--C	-45.24			
_T--C	-39.18			
_P--C	-27.94			
_S--C	50.31			
Effects Specification				
R-squared	0.76			
Adjusted R-squared	0.74			
F-statistic	33.08			
Prob(F-statistic)	0.00			

Note: * and ** indicate significant variables at the 5 and 10 percent significance levels, respectively.